MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Air Quality Analysis for Fine Particulate Matter ($PM_{2.5}$)

The following information is derived from the ambient air monitors operated by the state. Data from these monitors is reported to the U.S. Environmental Protection Agency's (EPA's) Air Quality System database, which constitutes the official record of air quality data. The monitoring information provided in the charts below highlights air pollutant levels (if any) that are in violation of the National Ambient Air Quality Standards.

$PM_{2.5}$ is airborne particulate matter with aerodynamic diameter smaller than 2.5 micrometers. It results from both direct emissions from air pollution sources (primary $PM_{2.5}$) and from atmospheric reactions between gaseous species that form particulate matter (secondary $PM_{2.5}$). Airborne particulate matter can have adverse health effects on the respiratory system and also on the heart.

In December 2012, EPA made the annual primary $PM_{2.5}$ standard more stringent, reducing it from 15 to 12 micrograms per cubic meter, based on the 3-year average of annual means. The 24-hour primary $PM_{2.5}$ standard was retained at 35 micrograms per cubic meter, based on the 98^{th} percentile of 24-hour measurements, averaged over three years.

The St. Louis area is officially classified as a nonattainment area for the previous annual $PM_{2.5}$ standard of 15 $\mu g/m^3$, though area monitors are currently showing compliance with this standard and the department is working with EPA to redesignate the area to attainment. The entire state is classified as unclassifiable/attainment based on the 24-hour $PM_{2.5}$ standard.

No monitors in Missouri that represent the appropriate area spatial scale of representativeness for comparison to the annual standard have recorded violations of the annual $PM_{2.5}$ standard of 12 $\mu g/m^3$. However, monitors in the greater St. Louis area in Illinois are violating the new annual standard. The State of Missouri must submit a recommendation for designation of attainment or nonattainment areas for the new annual standard to the EPA by December 2013. EPA then has one year to finalize area designations (by December 2014).

For more information about $PM_{2.5}$, see the following EPA website, which includes links to additional information on health effects, standards, implementation, etc.:

http://www.epa.gov/airquality/particlepollution

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Annual $PM_{2.5}$ Design Values[a]

Date 08/01/16

Site	County	Annual Average (µg/m³)						# of days over > 12 µg/m³	Design Value		
						Year-to-Date		> 12 µg/m³ (2012 Std)			Year-to-Date
St. Louis		2012	2013	2014	2015	2016[cd]	CV - 12	2016[c]	12-14	13-15	14-16[c]
Arnold West	Jefferson	9.8	9.7	10.6	11.4	8.7	14.2	31	10.0	10.6	10.2
Blair Street (FEM)	St. Louis City	11.1	10.3	10.7	9.5	8.7	16.0	32	10.7	10.2	9.6
Blair Street (FRM)*	St. Louis City	10.5	11.0	11.5	10.5	9.2	14.2	20	11.0	11.0	10.4
Blair Street (Comb.)**	St. Louis City	10.5	11.0	11.4	10.5	9.1	14.3	28	11.0	11.0	10.3
Branch Street***	St. Louis City	12.2	11.3	12.2	10.3	9.7	13.7	46	11.9	11.3	10.7
Forest Park^	St. Louis City		9.5	10.9	9.2	8.5	16.1	35		9.9	9.5
Ladue	St. Louis	10.8	11.3	10.5	10.1	8.4	15.6	26	10.9	10.6	9.7
South Broadway	St. Louis City	9.1	10.7	10.1	11.1	8.1	15.0	35	10.0	10.6	9.8
Kansas City											
Liberty	Clay	9.0	8.8	8.9	8.2	8.2	19.1	16	8.9	8.6	8.4
RG South	Cass	12.0	9.2	10.5	8.6	6.9	17.1	13	10.6	9.4	8.7
Troost	Jackson	9.7	9.9	9.2	8.2	6.3	18.8	33	9.6	9.1	7.9
Blue Ridge (I-70)^^	Jackson		7.6	7.6	7.3	6.3	21.3	15		7.5	7.1
Springfield											
MSU	Greene	9.4	8.3	9.8	8.9		NA	NA	9.2	****	****
Hillcrest H.S.^^^	Greene				7.3	7.1	NA	16		****	****
Outstate											
Eldorado Spgs.	Cedar	9.9	8.5	8.0	6.9	6.8	21.3	16	8.8	7.8	7.2
St. Joseph Pump Station	Buchanan	10.6	11.1	10.7	9.7	8.3	15.8	31	10.8	10.5	9.6
								393			

[a]Quality assured data through December 31, 2015.

[c]Year-to-date data has not been quality assured and is preliminary data. Do not quote, do not cite.

[d]Annual Average concentration measured year-to-date. Annual averages may increase or decrease as more data is collected over the year.

*The Blair St. site's $PM_{2.5}$ Federal Reference Method (FRM) is the primary reporting monitor. Data reporting for this monitor lags by several weeks due to filter processing time. The FEM monitor is a semi-continuous method reporting data every hour and will provide a 24-hour average.

**The Blair Street Site's $PM_{2.5}$ design value is based on a combined site level statistic. That is, if a FRM sample is missing on a given day, a valid collocated FEM/FRM/ARM sample on that day will be substituted consistent with 40 CFR Part 50, Appendix N, 3.0 (d)(2). Data reporting for this monitor statistic lags by several weeks due to filter processing time.

***The Branch Street monitor is classified as a unique middle scale monitoring site and not comparable to the annual $PM_{2.5}$ NAAQS. The concentrations reported are for informational purposes.

^Monitoring began on 1/1/2013.

^^Monitoring began on 7/1/2013.

^^^Monitor relocated from MSU and began monitoring on 4/16/2015.

****3-year design value can not be calculated.

CV - 12: The Critical Value (CV) for the Annual $PM_{2.5}$ NAAQS is the current Year's annual average which, if monitored, could yield a violation of the 2012 annual PM2.5 NAAQS for the most current three year period. (CV = 36.15 µg/m³ – Last year's annual average – previous year's annual average).

For more information about the implications of the daily Air Quality Index (AQI) for PM2.5 concentrations and related health messages. http://www.airnow.gov/.

Disclaimer: Data presented on this page is not the Official EPA Air Quality System (AQS) data record and does not constitute the official data record used for regulatory purposes. However, efforts are made to present historical data that closely resembles the results queried from AQS, but rounding or calculation differences can occur.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

24-Hour $PM_{2.5}$ Design Values[a]

Date 8/1/2016

Site	*County*	98th Percentile						# of Exceedances > 35 µg/m³ (2006 Std)	Design Value		
						Year-to-Date					Year-to-Date
St. Louis		**2012**	**2013**	**2014**	**2015**	**2016[cd]**	**CV - 35**	**2016[c]**	**12.14**	**13-15**	**14-16[c]**
Arnold West	Jefferson	21.4	23.5	25.2	24.3	19.9	57	0	23	24	23
Blair Street (FEM)	St. Louis City	25.1	22.2	23.9	20.7	20.9	61.9	1	24	22	22
Blair Street (FRM)*	St. Louis City	23.6	23.3	27.8	23.3	17.6	55.4	1	25	25	23
Blair Street (Comb.)**	St. Louis City	23.6	23.3	27.8	23.2	20.9	55.5	1	25	25	24
Branch Street	St. Louis City	28.5	23.8	27.0	22.9	23.2	56.6	1	26	25	24
Forest Park^	St. Louis City		20.6	29.0	20.4	20.8	57.1	0		23	23
Ladue	St. Louis	24.8	22.5	24.5	23.5	19.1	58.5	0	24	24	22
South Broadway	St. Louis City	21.0	22.3	25.2	25.7	20.4	55.6	0	23	24	24
Kansas City											
Liberty	Clay	19.5	19.1	22.0	17.6	19.5	66.9	1	20	20	20
RG South	Cass	22.2	19.2	24.1	20.7	16.0	61.7	0	22	21	20
Troost	Jackson	21.3	21.5	21.2	17.6	15.2	67.7	0	21	20	18
Blue Ridge (I-70)^^	Jackson		18.3	18.3	17.0	14.6	71.2	0		18	17
Springfield											
MSU	Greene	21.7	18.5	26.7	18.0		NA	NA	22	****	****
Hillcrest H.S.^^^	Greene				18.1	15.8	NA	0		****	****
Outstate											
Eldorado Spgs.	Cedar	20.4	19.1	18.8	18.3	16.0	69.4	0	19	19	18
St. Joseph Pump Station	Buchanan	22.7	23.4	22.5	21.0	19.4	63.0	0	23	22	21
								5			

[a]Quality assured data through December 31, 2015.

[c]Year-to-date data has not been quality assured and is preliminary data. Do not quote, do not cite.

[d]98th Percentile concentration is measured year-to-date. 98th Percentile concentrations may change as more data is collected over the year.

*The Blair Street site's $PM_{2.5}$ Federal Reference Method (FRM) is the primary reporting monitor. Data reporting for this monitor lags by several weeks due to filter processing time. The FEM monitor is a semi-continuous method reporting data every hour and will provide a 24-hour average.

**The Blair St. Site's PM2.5 design value is based on a combined site level statistic. That is, if a FRM sample is missing on a given day, a valid collocated FEM/FRM/ARM sample on that day will be substituted consistent with 40 CFR Part 50, Appendix N, 3.0 (d)(2). Data reporting for this monitor statistic lags by several weeks due to filter processing time.

^Monitoring began on 1/1/2013.

^^Monitoring began on 7/1/2013.

^^^Monitor relocated from MSU and began monitoring on 4/16/2015.

****3-year design value can not be calculated.

CV - 35: The Critical Value (CV) for the 24-hour $PM_{2.5}$ NAAQS is the current Year's 98th percentile which, if monitored, could yield a violation of the 2006 24-Hour $PM_{2.5}$ NAAQS for the most current three year period. (CV = 106.5 µg/m³ – Last year's 98th percentile – previous year's 98th percentile)

For more information about the implications of the daily Air Quality Index (AQI) for $PM_{2.5}$ concentrations and related health messages. http://www.airnow.gov/.

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